IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

THE TRUSTEES OF PURDUE UNIVERSITY, **Plaintiff,** **v.** **STMICROELECTRONICS INTERNATIONAL N.V. and STMICROELECTRONICS, INC.,** **Defendants.**	**Civil Action No. 6:21-CV-00727-ADA-DTG** **JURY TRIAL DEMAND**

DEFENDANTS' NOTICE PURSUANT TO 35 U.S.C. § 282

Pursuant to 35 U.S.C. § 282, Defendants STMicroelectronics International N.V. and STMicroelectronics Inc. (collectively, "Defendants") hereby provide and/or confirm their written notice pursuant to 35 U.S.C. § 282 of the patents, publications, and systems that they may rely upon to demonstrate anticipation, obviousness, or the state of the art with respect to asserted claims 9 and 10 of U.S. Patent No. 7,498,633 (the "'633 patent"). Defendants may also rely on the file history of the '633 patent, as well as Plaintiff's admissions during claim construction (*see, e.g.*, Dkt. 70, 76). Defendants also hereby incorporate by reference all information set forth in Defendants' invalidity contentions and expert reports, including all patents, references and information, including the prior art references listed below, as well as references showing the state of the art.

I. PATENTS ASSERTED AS PRIOR ART

Defendants may rely upon the following prior art patent documents as anticipating and/or rendering obvious asserted claims 9 and/or 10 of the '633 patent, as showing that certain features were well-understood, routine, or conventional, and/or as showing the state of the art.

U.S. Patent Appl. Pub. No. 2002/0038891 A1 (US 6,956,238) (filed Jul. 24, 2001) by Sei-Hyung Ryu, Anant Agarwal, Mrinal Kanti Das, Lori A. Lipkin, John W. Palmour, and Ranbir Singh
U.S. Patent Application Publication No. 2004/0119076 A1 (US 7,221,010) (filed Oct. 30, 2003) by Sei-Hyung Ryu
U.S. Patent No. 6,639,273 (filed Oct. 28, 2003) issued to Katsunori Ueno
U.S. Patent No. 6,316,791 (filed Nov. 3, 2001) issued to Reinhold Schörner, Dietrich Stephani, Dethard Peters, and Peter Friedrichs
JP 2001-144288 (filed May 25, 2001) issued to Kataoka Mitsuhiro, Nakamura Hiroki, and Oya Nobuyuki
U.S. Patent No. 7,118,970 (filed Jun. 22, 2004) issued to Mrinal Kanti Das and Sei-Hyung Ryu
U.S. Patent No. 7,230,273 (filed Jun. 13, 2003) issued to Makoto Kitabatake, Osamu Kusumoto, Masao Uchida, Kunimasa Takahashi, and Kenya Yamashita
U.S. Patent No. 7,345,342 (filed May 20, 2003) issued to Ashok Challa, Alan Elbanhawy, Steven P. Sapp, Peter H. Wilson, Babk S. Sani, and Christopher B. Kocon
U.S. Patent No. 7,638,841 (filed July 2, 2002) issued to Ashok Challa
U.S. Patent No. 6,413,822 (filed May 20, 2003) issued to Richard K. Williams and Wayne Gabowski
U.S. Patent No. 5,317,184 (filed May 20, 2003) issued to Christopher L. Rexer
U.S. Patent No. 7,091,558 / US 2004/0222483 A1 (EP03425099) (filed Jan. 23, 2004) issued to
U.S. Patent No. 7,638,841 (filed May 20, 2003) issued to Ferruccio Frisina, Giuseppe Ferla, Angelo Magri', and Dario Salinas
U.S. Patent No. 6,054,737 (filed Apr. 24, 2000) issued to Angelo Magri', Ferruccio Frisina, Giuseppe Ferla
EP0022001A1 (FR7916902) (filed Jan. 7, 1981) issued to Eugène Tonnel
U.S. Patent No. 6,204,533 (filed Mar. 20, 2001) issued to Richard K. Williams and Wayne B. Grabowski
U.S. Patent No. 6,388,280 (US20010050383A1) (filed May 14, 2002) issued to Kazunari Hatade and Kazutoyo Takano
U.S. Patent No. 6,043,532 (filed Mar. 28, 2000) issued to Riccardo Depetro and Michele Palmieri
U.S. Patent No. 5,171,705 (filed Dec. 15, 1992) issued to Benedict C. K. Choy
FR 2640081 A1 and JP 8-34312 (JP2-154469) (filed Jun. 8, 1990) issued to Kazuhiro Tsuchiya
U.S. Patent No. 5,585,657 (filed Dec. 17, 1996) issued to Taylor R. Efland, Roy C. Jones, III, Oh-Kyong Kwon, Michael C. Smayling, Satwinder Malhi, and Wai T. Ng
U.S. Patent No. 5,877,044 (filed Mar. 2, 1999) issued to John Manning Savidge Neilson, Christopher Boguslaw Kocon, Richard Douglas Stokes, Linda Susan Brush, John Lawrence Benjamin, Louise Ellen Skurkey, and Christopher Lawrence Rexer
U.S. Patent No. 5,981,343 (filed Nov. 9, 1999) issued to Angelo Magri, Ferruccio Frisina, and Giuseppe Ferla
U.S. Patent No. 5,703,389 (filed Dec. 30, 1997) issued to Lynnita K. Knoch and Pak Tam

II. OTHER PATENTS SHOWING THE STATE OF THE ART

Defendants may rely upon the following patent documents as showing the state of the art or that certain features were well-understood, routine, or conventional, including without limitation using them in combination with one or more pieces of prior art identified in Sections I, III, and/or V.

U.S. Patent Appl. Pub. No. 2002/0030191 A1 (US 6,972,436) (filed Mar. 14, 2002) by Mrinal Kanti Das, Lori A. Lipkin, John W. Palmour, Scott Sheppard, and Helmut Hagleitner
U.S. Patent No. 6,136,727 (filed Oct. 24, 2000) issued to Katsunori Ueno
U.S. Patent No. 5,323,022 (filed Jun. 21, 1994) issued to Robert C. Glass, John W. Palmour, Robert F. Davis, and Lisa S. Porter
U.S. Patent No. 5,233,215 (filed Aug. 3, 1991) issued to Bantval J. Baliga
U.S. Patent No. 6,107,142 (filed Aug. 22, 2000) issued to Alexander Suvorov, John W. Palmour and Ranbir Singh
U.S. Patent No. 5,510,281 (filed Apr. 23, 1996) issued to Mario Ghezzo, Tat-Sing P. Chow, James W. Kretchmer, Richard J. Saia, and William A. Hennessy
U.S. Patent No. 5,111,253 (filed May 5, 1992) issued to Charles S. Korman, Bantval J. Baliga, and Hsueh-Rong Chang
U.S. Patent Appl. Pub. No. 2004/0119076A1 (filed Oct. 30, 2003) issued to Sei-Hyung Ryu
Admissions / admitted prior art in U.S. Pat. No. 7,498,633 (priority date before the invention of the ’633 Patent claims) issued to James A. Cooper and Asmita Saha
U.S. Patent Appl. Pub. No. 2004/0046202 (filed Apr. 3, 2003) by Kazuya Nakayama, Bungo Tanaka, and Nobuyuki Sato
JP 2003-309262 (filed Oct. 31, 2003) issued to Takeshi Endo, Yuichi Takeuchi, and Nobuyuki Oya
U.S. Patent No. 4,920,064 (filed Apr. 24, 1990) issued to Kenneth R. Whight
U.S. Patent No. 6,351,009 (filed Feb. 26, 2002) issued to Christopher B. Kocon and Jun Zeng
U.S. Patent No. 6,700,156 (filed Jun. 28, 2002) issued to Wataru Saitoh, Ichiro Omura and Satoshi Aida
U.S. Patent No. 6,710,406 (filed Nov. 14, 1997) issued to Brian Sze-Ki Mo, Duc Chau, Steven Sapp, Izak Bencuya, and Dean Edward Probst
U.S. Patent No. 6,828,195 (filed Nov. 14, 1997) issued to Brian Sze-Ki Mo, Duc Chau, Steven Sapp, Izak Bencuya, and Dean Edward Probst
U.S. Patent No. 6,921,941 (filed Feb. 26, 2003) issued to Katsuhiko Nishiwaki, Tomoyoshi Kushida, and Sachiko Kawaji
U.S. Patent No. 6,958,514 (filed Apr. 3, 2003) issued to Kazuya Nakayama, Bungo Tanaka, and Nobuyuki Sato
U.S. Patent No. 6,989,568 (filed Dec. 26, 2000) issued to Kiminori Watanabe, Keisuke Matsuoka, and Takao Ito
U.S. Patent No. 7,052,963 (filed Jan. 28, 2004) issued to Richard K. Williams and Wayne Grabowski
U.S. Patent No. 7,217,954 (filed Mar. 17, 2004) issued to Osamu Kusumoto, Makoto

Kitabatake, Kunimasa Takahashi, Kenya Yamashita, Ryoko Miyanaga, and Masao Uchida
WO 03/088364 (US 7,332,771) (filed Oct. 23, 2003) issued to Steven T. Peake
U.S. Patent No. 5,661,312 (filed Aug. 26, 1997) issued to Charles E. Weitzel and Mohi Bhatnagar
U.S. Patent No. 5,396,085 (filed Mar. 7, 1995) issued to Bantval J. Baliga
U.S. Patent Appl. Pub. No. 2007/0170436 A1 (filed Aug. 18, 2005) by Yoshitaka Sugawara
U.S. Patent No. 5,506,421 (filed Apr. 9, 1996) issued to John W. Palmour
U.S. Patent No. 6,054,352 (filed Apr. 25, 2000) issued to Katsunori Ueno
U.S. Patent No. 4,070,690 (filed Jan. 24, 1978) issued to Robert A. Wickstrom

III. PUBLICATIONS ASSERTED AS PRIOR ART

Defendants may rely upon the following prior art publications as anticipating and/or rendering obvious asserted claims 9 and/or 10 of the ’633 patent, as showing that certain features were well-understood, routine, or conventional, and/or as showing the state of the art.

“Power MOSFETS in 4H-SiC: Device Design and Technology” in SILICON CARBIDE: RECENT MAJOR ADVANCES (ADVANCED TEXTS IN PHYSICS) 2004th Edition (Springer, October 8, 2003), Wolfgang J. Choyke, Hiroyuki Matsunami, and Gerhard Pensl (Editors) (June 26, 2003)
J. A. Cooper et al, “Status and Prospects for SiC Power MOSFETs,” IEEE Transactions on Electron Devices, Vol. 49, No. 4, April 2002 at 658 (Mar. 1997)
Shenoy et al., “High-Voltage Double-Implanted Power MOSFET’s in 6H-SiC,” IEEE Electron Device Letters, Vol. 18, No. 3, March 1997, at 93 (Apr. 2002).
Matin, A Self-Aligned Process for High-Voltage, Short-Channel Vertical DMOSFETs in 4H-SiC, IEEE Trans on Electron Devices, Vol. 51, No. 10 (Oct. 2004)
Ryu et al., “Design and Process Issues for Silicon Carbide Power DiMOSFETS 2001,” Mat. Res. Soc. Symp. Vol. 640 © 2001 (Presented at ISCRM2001 Oct-Nov 2001; Proceedings published by 2000)
B. Jayant Baliga, Modern Power Devices, John Wiley & Sons, Inc., 1987 (Feb. 27, 1987)
G. Belverde et al., “A low-voltage MOSFET with small on-resistance: an extended characterization in high-efficiency power converter applications," Conference Record of the 2001 IEEE Industry Applications Conference. 36th IAS Annual Meeting (Cat. No.01CH37248), 2001, pp. 635-640 vol. 1 (2001)
Chao-Yang Lu “Design and Fabrication of High Performance UMOSFETS,” PhD Thesis, School of Electrical and Computer Engineering, Purdue University, West Lafayette, IN, 2003 (Dec. 2003)
Ryu et al., “Design and Process Issues for Silicon Carbide Power DiMOSFETS 2001,” Mat. Res. Soc. Symp. Vol. 640 © 2001
Proceedings Silicon Carbide—Materials, Processing, and Devices, Symposium H, Ryu et al., “Design and Process Issues for Silicon Carbide Power DIMOFETS,” Session H4: SiC Devices. Proceedings published as Volume 640 of the Materials Research Society Symposium Proceedings Series (Nov. 28, 2000)
STMicroelectronics “AN1506 Application Note” (2002)

IV. OTHER PUBLICATIONS SHOWING THE STATE OF THE ART

Defendants may additionally rely upon the following prior art publications as showing the state of the art or that certain features were well-understood, routine, or conventional, including without limitation using them in combination with one or more pieces of prior art identified in Sections I, III, and/or V.

Peters, "4H-SiC Power MOSFET Blocking 1200V with a Gate Technology Compatible with Industrial Applications," Materials Science Forum Vols 433-436 (2003) pp 769-772 (2003)
S.M. Sze, "Physics of Semiconductor Devices," 2nd Ed., John Wiley and Sons (1981)
P. G. Neudeck, "Progress in Silicon Carbide Semiconductor Electronics Technology," Journal of Electronic Materials, Vol. 24, No. 4 (1995)
M. Bhatnagar et al., "Comparison of 6H-SiC, 3C-SiC, and Si for Power Devices," IEEE Transactions on Electron Devices, Vol. 40, No. 3 (Mar. 1993)
Cooper et al., "SiC Power-Switching Devices—The Second Electronics Revolution?" Proceedings of the IEEE, Vol. 90, No. 6, at 956 (June 2002)
J. A. Cooper et al, "Status and Prospects for SiC Power MOSFETs," IEEE Transactions on Electron Devices, Vol. 49, No. 4, at 658 (April 2002)
Shenoy et al., "High-Voltage Double-Implanted Power MOSFET's in 6H-SiC," IEEE Electron Device Letters, Vol. 18, No. 3, at 93 (March 1997)
Grant, "Power MOSFETs Theory and Applications," John Wiley & Sons (1989)
R. W. Coen et al., "A High-Performance Planar Power MOSFET," IEEE Trans on Elec. Dev. Vol., ED-27, No. 2 (Feb. 1980)
Saint, "IC Layout Basics," McGraw-Hill (2001)
Final Technical Report, N00014-01-1-0072, "Development of SiC Power MOSFETs with Low On-Resistance for Military and Commercial Applications" (2003)
Characterization of 6H-SiC MESFETs for USE in High Temperature Electronics," 1995 Proceedings. 45th Electronic Components and Technology Conference, 1995, pp. 261-265, IEEE doi 10.1109/ECTC.1995.514395 (1995)
J.B. Casady et al., "Silicon Carbide Power MOSFET Technology," Compound Semiconductors 1997. Proceedings of the IEEE Twenty-Fourth International Symposium on Compound Semiconductors. IEEE doi 10.1109/ISCS.1998.711654 (1997)
V.R. Vathulya, "A Novel 6H-SiC Power DMOSFET with Implanted P-Well Spacer," IEEE Electron Device Letters, VOL. 20, NO. 7, July 1999, P. 354 (2001)
A. Agarwal et al., "Large area 4H-SiC power MOSFETs," Proceedings of the 13th International Symposium on Power Semiconductor Devices & ICs. IPSD '01 (IEEE Cat. No.01CH37216), 2001, pp. 183-186, doi 10.1109/ISPSD.2001.934585 (2001)
Frequency Power Switching Applications," Mat. Res. Soc. Symp. Proc. Vol. 764 © 2003 Materials Research Society, MRS Online Proceedings Library (OPL) , Volume 764: Symposium C – New Applications for Wide-Bandgap Semiconductors , 2003 , C2.7 DOI https://doi.org/10.1557/PROC-764-C2.7 (2003)
S. Ryu et al., "10A, 2.4kV Power DiMOSFET in 4H-SiC," IEEE Electron Device Letters,

VOL. 23, NO. 6, June 2002 (2002)
S. Ryu et al, "10-kV, 123-m-ohm-cm2 4H-SiC Power MOSFETs," IEEE Electron Device Letters, Vol. 25, No. 8, p. 556 (Aug. 2004)
Saha and Cooper, A 1-kV 4HSiC Power DMOSFET Optimized for Low ON-Resistance, IEEE Transactions on Electron Devices, Vol. 54, 2007, p. 2786
Saha, Asmita, and James A. Cooper. "Optimum Design of Short-Channel 4H-SiC Power DMOSFETs." Materials Science Forum. Trans Tech Publications, Ltd., October 2006. https://doi.org/10.4028/www.scientific.net/msf.527-529.1269., From the "Proceedings of the International Conference on Silicon Carbide and Related Materials – 2005 Pittsburgh, PA, (Sept. 18-23, 2005)
N. Ramungul, "Design and Characterization of 6H-SiC Devices for High-Power and High-Temperature Applications." Thesis at Rensselaer Polytechnic Institute, Troy, New York (Mar. 1998)
Baliga, "Silicon Carbide Power Devices," World Scientific Publishing (2005)
Hu et al., "Optimum Design of Power MOSFET's", IEEE Transactions of Electron Devices, Vol. ED-31, No. 12 (Dec. 1984)
Sei-Hyung Ryu, A. Agarwal, J. Richmond, J. Palmour, N. Saks and J. Williams, "27 m/splOmega/-cm/sup 2/, 1.6 kV power DiMOSFETs in 4H-SiC," Proceedings of the 14th International Symposium on Power Semiconductor Devices and ICs, Sante Fe, NM, USA, 2002, pp. 65-68, doi: 10.1109/ISPSD.2002.1016172 (2002)
Ryu, Sei Hyung, Anant K. Agarwal, Sumi Krishnaswami, Jim Richmond, and John W. Palmour. "Development of 10 kv 4h-sic power DMOSFETs." In Materials Science Forum, vol. 457, pp. 1385-1388. Trans Tech Publications Ltd, 2004; Presented at ICSCRM 2003 Oct 5-10, 2003 Lyon, France (Oct. 2003)
Peters, Dethard, R. Schorner, Peter Friedrichs, J. Volkl, Heinz Mitlehner, and Dietrich Stephani. "An 1800 V triple implanted vertical 6H-SiC MOSFET." IEEE Transactions on Electron Devices 46, no. 3 (1999): 542-545

V. SYSTEMS AS PRIOR ART

Defendants may rely upon the following prior art systems, devices, and/or software, as established through physical exhibits, testimony of knowledgeable witnesses and associated documentation related to the prior use and/or sale of such systems, devices, and/or software as anticipating and/or rendering obvious asserted claims 9 and/or 10 of the '633 patent, showing that certain features were well-understood, routine, or conventional, and/or as showing the state of the art.

MD Mesh Products
MDmesh MDx0 Products
MDmesh MDx1 Products
MDmesh MDx2 Products

MDmesh MDx5 Products
MDmesh MDx7 Products
MDmesh MDx9 Products
MDmesh MDxB Products
MDmesh MDxN Products
PP26 Products
EZ67 Products
EZ66 Products
PP21 Products
SP21 Products
AD5H Products
AD6A Products
AD6E Products

VI. PERSONS TO BE IDENTIFIED UNDER 35 U.S.C. § 282

Defendants may rely upon the following persons as having prior knowledge of the state of the art or knowledge that certain features were well-understood, routine, or conventional.

Name	Contact Information
Dean Neikirk	Counsel for Defendants
Lori Lipkin	Counsel for Defendants
Sylvia Hall-Ellis	Counsel for Defendants
Mario Saggio	Counsel for Defendants
Antonio Grimaldi	Counsel for Defendants
Karl Straatveit	Counsel for Defendants

Dated: September 20, 2023

Respectfully submitted,

By: */s/ Michael D. Hatcher*

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CERTIFICATE OF SERVICE

I, the undersigned, do hereby certify that a true and correct copy of the foregoing document was served on all parties to this action via the Court's ECF system on September 20, 2023.

/s/ Michael D. Hatcher
Michael D. Hatcher